

Permit # 135-97-TV

Plant ID 0026

**Air Pollution Control District  
Jefferson County, Ky  
20 October 2000**

**TITLE V PERMIT SUMMARY**

**Company:** Blue Grass Cooperage Company, Inc.

**Plant Location:** 402 MacLean Ave., Louisville, KY 40209-1723

**Date App. Received:** 22 April 1997  
Revised Initial: 10 October 2000

**Date Admin Complete:** 12 May 1997

**Date of Draft Permit:** 22 October 2000

**Date of Proposed Permit:** 30 Nov 2000

**District Engineer:** Ronald Bohannon

**Permit No.:** 135-97-TV

**Plant ID:** 0026

**SIC Code:** 2449

**NAICS:** 32192

**AFS:** 00026

**Introduction:**

This permit will be issued pursuant to: (1) District Regulation 2.16, (2) Title 40 of the Code of Federal Regulations Part 70, and (3) Title V of the Clean Air Act Amendments of 1990. Its purpose is to identify and consolidate existing District and Federal air requirements and to provide methods of determining continued compliance with these requirements.

Jefferson County is classified as an attainment area for sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), particulate matter (PM), particulate matter less than 10 microns (PM<sub>10</sub>), and lead (Pb); unclassifiable for particulate matter less than 2.5 microns (PM<sub>2.5</sub>); and is a moderate non-attainment area for ozone (O<sub>3</sub>).

**Application Type/Permit Activity:**

- ☒ Initial Issuance
- ☐ Permit Revision
  - ☐ Administrative
  - ☐ Minor
  - ☐ Significant
- ☐ Permit Renewal

**Compliance Summary:**

- ☒ Compliance certification signed
- ☐ Compliance schedule included
- ☐ Source is out of compliance

**I. Source Description**

1. **Class I Area Impacts:** This source is not located in or near a Class I area.
2. **Product Description:** Manufacture of white oak barrels for liquor fermentation.
3. **Overall Process Description:**

**a. Wood Drying Kilns**

The white oak planks of rough sawed lumber are received at the facility on pallets from truck transport, then stored in the two pre-dryers. Wood is delivered either green or air dried; whereby, the white oak is cured or dried to the proper moisture content. Pre-heaters / pre-dryers are also used in this process, along with brick tunnel kilns.

1) First Stage of the Drying Process

Two (2) pre-heater / pre-dryer units are used for this initial conditioning process, where the moisture content of the white oak is reduced to around 20% moisture. Pre-heater units have ten (10) roof vents each, equipped with circulating fan units. There are a total of twenty (20) roof vents on these two (2) pre-dryers units.

(2) Second Stage of the Drying Process

Eight (8) package wood drying kiln units used for additional conditioning of wood, where the moisture content of the white oak is reduced to 10% to 12% moisture. These modular drying kilns have fourteen (14) roof vents each and no fan units. There are a total of fifty-six (56) roof vents on these four (4) modular drying kilns. The original brick tunnel kiln units are no longer used for the wood drying process.

Steam heat conditioning operations, controlling the humidity during the wood curing process. Steam heat is supplied from the wood-fired boiler, resulting in white oak boards at 12 % moisture. The "green" or unseasoned white oak wood is conditioned to the desired moisture content. Regulation 6.09 is applicable for opacity and PM emissions. From the drying kilns, the white oak planks are transferred to either the barrel stave operations, or to the head gluing and forming operations.

**b. Barrel (Stave) Operations**

Staves (narrow strips of wood that are placed edge to edge to form the sides of the barrel) from the drying kilns are loaded into the equalizer, where they are cut to the proper length. From the equalizer, the staves passed through a planner, where the wood pieces are reduced to the proper thickness. The staves then proceed through the jointers, where they are tapered on each end and the sides are angled. The finished staves are loaded onto pallets, then transferred to the barrel raising or assembly area. Emissions from the equalizer, planer and jointing operations are ducted into cyclone units, which vent into various baghouses. Although, cyclones can be considered as air pollution control devices, all of the cyclones associated with this process have been determined by APCD to be an

integral part of the process for the recovery of sawdust through a collection system. The sawdust material is collected, then transferred to sawdust storage units. From the sawdust storage compartments, the sawdust is removed and then used as fuel in wood-fired boiler. Wood that is removed from the staves, during the equalizing and planing operations, is allowed to drop into equalizer hammer mills, where the particle size of the material is reduced. Wood from the equalizer hammer mills is collected and transferred into a wood waste / sawdust storage tank, prior to being combusted in the wood waste boiler.

#### **c. Head Unit Operations**

Wood pieces from the drying kilns are passed through a rough heading planer, which reduces the thickness of wood to be used in the head units. From the planer, the wood piece either goes to the jointer, which smooths the edges of the head piece, or on to the edging saw, where the width or length of the piece is reduced. Most of the head pieces are transferred directly to the dowel process. Occasionally, the head pieces are too narrow to be doweled individually; therefore, these thin pieces are transferred to the gluing operations where they are joined to thicker head pieces.

During the dowel operations, holes are drilled into the side of the head pieces and wooden pegs or dowels are inserted into the holes. The wooden dowels increase the strength of the head pieces, but also decrease the flexibility of the finished head unit. The head pieces are then assembled into units of the appropriate size. The head unit then enters the finish planer, where it is further reduced in thickness to the proper dimension. After the planer, the head unit enters the rounder, which cuts the square head units into round heads with a v-shaped edge.

#### **d. Char Operations**

##### **(1) Barrel Charring Operations**

Barrel raiser manually assemble and form each white oak barrel, through a visual process of selecting wooden staves based upon their width to form a completed barrel, which has the proper size and correct number of staves. Steel hoops are used to maintain the shape of the barrel through the steam process, then riveted metal bands are used to replace the metal hoops. The barrels move through a steam treating process, where the barrels enter a steam tunnel which softens and increases the flexibility of the wood. The steel hoops are removed from the barrels after the steam treating process, then the riveted metal bands are placed securely around the barrel. The barrels are passed through a dry fire process, which removes some of the excess moisture from the steam tunnel process.

The barrels eventually reach the barrel char process for the required treatment of the interior of each white oak barrel. During this process, the barrels are placed upon natural gas fired torches or burners, which ignite the interior of the wood staves, leaving a charred surface for contact with the fermenting liquid. The barrel char operation has two

sections, with each section equipped with four natural gas fired torches. The white oak barrels are grouped together and charred four at a time. Once the barrels are positioned above the torch / burners, the natural gas fired torches are lit to ignite the inside of the barrel. The barrels are allowed to burn for a set period of time to produce a certain amount of charred wood, then the controlled burn is quenched with a water spray. The charred oak is a main requirement, which gives the distilled spirits their characteristic color, along with the distinctive flavor and aroma. The combustion gases and the steam generated from the quenching operations are ducted to the smoke control system. The smoke control system consists of two chambers equipped with water spray nozzles, with the final control being a metal mesh filter, which collects particulates and reduces the quantity of materials released to the atmosphere.

## (2) Head Charring Operations

After the barrel heads are formed, they proceed to the head charring operation. The head char system is composed of fifteen stations, with one head unit per station. The head char system is equipped with a 2 MM Btu/hr natural gas burner, which chars only one side of the barrel head unit. Any smoke emissions from the head char process are vented through a stack directly to the atmosphere. After the head unit is charred, the v-shaped outer edge of the head is coated with a thin layer of paraffin, which strengthens the eventual seal between the head unit and the groove in the barrel.

### **e. Glue Application and Operations ( Glue Wheel )**

The glue wheel operation is where adhesive is applied to narrow strips of wood, which are not wide enough to be used individually as head pieces. The head pieces are clamped together and placed upon a clamp carrier, which is the actual glue wheel process. The clamp carrier proceeds into an enclosure, which is steam-heated with circulating air. Both the applicator on the gluing line and the enclosure are equipped with exhaust vents. The glue solution consists of penocelite adhesive and formaldehyde solution. This process is used infrequently, since it is primarily used to reduce the overall amount of wasted wood, which might be too thin for head usage and would be discarded without the glue process.

### **f. Steam Generation**

Process steam is generated from a 42 MM Btu/hr wood waste combustion boiler. This boiler receives sawdust from the West, Middle, Crozier and East cyclones, which are located on the boiler room roof. Steam generated by the boiler is used in the steam tunnels, the dry fire area and the glue wheel head assembly operation.

Process steam for production support and low steam demand is also generated by one alternate gas-fired boiler. This auxiliary boiler is fueled by natural gas only, with an output rating of 27 MM Btu/hr. Continuous Emission Monitoring (CEMs) for SO<sub>2</sub>,

NO<sub>x</sub> and Opacity is not required for this size gas-fired boiler.

**g. Vycar System**

This process applies a latex coating to the end-grain of the finished barrels, which is applied before the finished barrels leave the warehouse. The end-grain coating uses a latex coating called Vycar, which contains formaldehyde in trace concentrations of 0.05 per cent.

- 4. Site Determination:** There are no other facilities that are contiguous or adjacent and under common control.

**5. Emission Unit Summary:**

**a. U-1: Drying Kilns ( 8 Package Dryer units and 2 Pre-dryer / Pre-heater units )**

White oak wood is received, stored and conditioned in the pre-dryer / pre-heater units. The wood is then transferred and dried in any of the eight (8) package wood kilns, which allows the wood to gradually obtain the desired 12% moisture content before usage. Emissions from this drying and curing process do not require any control devices, since there are only fugitive emissions from this type of process operation. Emissions from the drying kilns are VOC, PM, NO<sub>x</sub> and SO<sub>2</sub>.

**b. U-2a: Barrel Production**

Particulate Matter (PM) is generated from the barrel making operations. Sawdust is produced from the wood-working equipment, the stave milling and the head forming.

**c. U-2b: Head Production**

White oak boards joined to form heads are cut and shaped to form v-shaped edge for the finished barrel head to fit into the top and bottom of the barrels.

**d. U-3a: Barrel Char Operation**

The inside of the barrels are ignited with natural gas burners, creating a charred surface on the barrel staves, as required for the production of fermenting liquid. A water spray is used to quench the burning wood, with the combustion gases and particulates being ducted out into a smoke control system. This smoke control system uses water sprays and metal mesh filters to trap some of the particulate matter from this charring process.

**e. U-3b: Head Char Operation**

This unit is equipped to char one side of the barrel head using a natural gas burner.

After the heads are charred, a coating of bees wax is applied to the v-shaped edge of the barrel head. Any smoke emissions from this head char process are vented through a stack out the roof of the manufacturing building. Emissions are small amounts of the particulate matter generated as burnt wood from the wood head charring process.

**f. U-4: Head Gluing Operation ( Glue Wheel )**

This process allows the use of individual wood pieces that are considered too thin to be used for barrel heads. This gluing process is not used for every head, only for the heads which use smaller pieces of wood that previously would have been discarded as wood waste. A Glue Wheel arrangement is used where adhesive is applied to the edges of the wood, the wood pieces are clamped together as a unit, then the glued wood unit is cured by steam heating in a small wood curing treatment oven. The emissions from this process are from the Penacolite adhesive mixture and the Formaldehyde solution.

**g. U-5a: Combustion Source - Wood-fired Boiler**

BGCC operates one sawdust / wood waste fired boiler. This is a wood-fired steam boiler, rated at 42 MM Btu/hr, which essentially uses sawdust for fuel, along with some shredded wood and other small wood waste materials. Natural gas is only used for initial start-up of boiler, since the gas burners are not able to provide the process steam demand.

**h. U-5b: Feed System for Sawdust Fuel to Boiler**

Sawdust generated in the barrel manufacturing process is pneumatically transferred to a sawdust storage tank. A screw conveyor withdraws sawdust from the bottom of the storage tank; whereby, this sawdust is transferred to a pneumatic system, which is controlled by the East Cyclone unit. The sawdust is then dropped into a hopper from the cyclone and fed into a 16" screw conveyor system. A portion of the sawdust is blown into the boiler as fuel, with the excess sawdust being recycled back to the sawdust storage tank. Normal barrel manufacturing during the daytime generates an excess amount of sawdust, which is stockpiled in the sawdust storage tank. The storage of the excess sawdust allows the boiler to continue to be operated when there is no actual barrel manufacturing. The boiler needs to operate during the night and also over the weekends, since the steam produced is required to provide continuous operation for the kilns in the Wood Drying Operations.

**i. U-5c: Combustion Source - Gas-fired Boiler**

BGCC operates one gas-fired boiler for production support and low steam demand. This boiler is fueled by natural gas only, with an output rating of 27 MM Btu/hr.

**j. U-6: VYCAR System**

After manufacturing produces a completely finished barrel, the end-grain of the wood is coated and sealed with a latex material. This sealcoat process uses a latex material called Vycar, which contains formaldehyde at a concentrations of 0.05%.

**k. U-7: Cold Solvent Parts Cleaners**

One cold solvent parts cleaner / washer, which use Mineral Spirits as solvent. This is a 45-gallon parts washer, with 30-gallon secondary drum reservoir. The emissions from this unit are VOC from the Mineral Spirits.

**6. Fugitive Sources:** See permit application section 2.2

**7. Title V Major Source Status by Pollutant:**

<b>Pollutant</b>	<b>Actual Emissions (tpy) 1999 Data</b>	<b>Major Source Status (based on PTE)</b>
<b>CO</b>	97.5	Yes *
<b>NO<sub>x</sub></b>	53	No
<b>SO<sub>2</sub></b>	3	No
<b>PM</b>	39	Yes
<b>VOCs</b>	46.2	No
<b>Single HAP (&gt; 1 tpy)</b>		
Formaldehyde	1.22	No
<b>Total HAPs (VOC and Non-VOC)</b>	1.5	No

\* The potential CO emissions were calculated at 233 TPY using AP-42 emission factors based upon wet pine, with fifty per cent (50%) moisture content. BGCC actually uses dry white oak wood / sawdust, with only seven per cent (7%) moisture which results in lower VOC and CO emissions.

**8. Applicable Requirements:**

☐ PSD      ☒ NSPS      ☒ SIP      ☐ NSR      ☐ NESHAPS  
☒ District-Origin      ☐ MACT      ☐ Other

**9. Referenced Federal Regulations in Permit:**

40 CFR Part 60, Subpart Dc  
Standards of Performance for Industrial-Commercial - Institutional Steam Generating Units.

**II. Regulatory Analysis**

1. **Emission and Operating Caps:** The source is not subject to any plant-wide emission or operating caps.
2. **Compliance Status:** The source signed and submitted a Title V compliance certification in its permit application.
3. **Operational Flexibility:** The source did not request to operate under alternative operating scenarios in its Title V Permit Application.
4. **Testing Requirements:** None at this time.
5. **Monitoring, Record Keeping and Reporting Requirements:** The source is required to monitor, maintain records of, and report on various operating parameters to demonstrate ongoing compliance with all applicable requirements. Compliance reporting is required semi-annually, except where underlying applicable regulations or permit conditions require more frequent reporting.

i. Opacity

- 1) Emission Unit U1 - Drying Kilns - Most, if not all, of the emissions from the drying kilns consist of steam; therefore, the District believes the visible (opacity) emissions would not be of concern. No periodic monitoring is required to demonstrate ongoing compliance with the opacity standard.
- 2) Emission Units U-2a, U-2b, U-3b, U-5a, U-5b and U-5c - The weekly and/or monthly visible emissions survey for these emission units is sufficient periodic monitoring to demonstrate ongoing compliance with the opacity standard. The source is required to initiate corrective action within 8 hours, if visible emissions are observed during the survey. If visible emissions persist, then a Method 9 test is required. The periodic visible emissions surveys and Method 9 tests, if necessary, should be adequate monitoring to reasonably assure the source meets its opacity obligations for these emission units.
- 3) Emission Unit U3a (Barrel Char) - The company will perform daily visible emission readings, which conform to the requirements for a Method 9 test. These daily Method 9 tests will be performed for a period of time to establish a compliance history, at which time, the source may perform daily visible emissions surveys.

ii. Particulate Matter (PM)

- 1) Emission Units U1 (Drying Kilns) - The company will monitor and maintain records of the quantity of wood processed through the drying kilns.



- 2) Emission Units U2a, U2b, U3a, U3b, U5a, U5b and U5c - The company will perform daily record keeping of the quantity of wood processed, the hours of operation and the quantity of particulate emissions. The District has determined that the daily record keeping coupled with parametric monitoring of required control devices is sufficient monitoring to reasonably assure ongoing compliance with the applicable requirements.
- 2) Particulate matter stack testing for emission units U-3a (Barrel Char) and U-3b (head char) was performed on March 16, 1999. The average PM emission rate was 0.554 lbs/hr from the barrel char and 0.197 lbs/hr from the head char. This is well below the allowable PM emission rate specified in the Title V operating permit. Periodic monitoring for the barrel char operation will consist of daily Method test.

### iii. VOC

- 1) Emission Unit U4 and U6 (Vycar and Glue Operations) - Periodic monitoring for these emission units consists of record keeping of the quantity of raw materials used, the weight percent of VOC in each raw material, and the hours of operation.
- 2) Emission unit U7 (cold solvent parts cleaner) - The company will maintain records of the material safety data sheets for each solvent used and perform weekly inspections.

### 6. Off-Permit Documents: None

The District considers an “off-permit document” as a document on which a source’s compliance with given regulation(s) is contingent or which contains regulatory requirement(s), but is only referenced in a source’s Title V Operating Permit. The designation “off-permit document” shall be made at the District’s discretion, and may include, but not be limited to, documents such as Regulation 1.05 VOC compliance plans, PMPs, MOCS; or other documents which are too voluminous to be included in a source’s Title V Operating Permit, as determined by the District.

## III. Other Requirements

1. **Temporary Facilities:** The source did not request to operate any temporary facilities.
2. **Short Term Activities:** The source did not report any short term activities.
3. **Compliance Schedule/Progress Reports:** The source has certified compliance with all applicable requirements; therefore, no compliance schedule or progress reports are necessary.
4. **Emissions Trading:** None.

- 5. Acid Rain Requirements:** The source is not subject to the Acid Rain Program.
- 6. Stratospheric Ozone Protection Requirements:** Title VI of the CAAA regulates ozone depleting substances and requires a phase-out of their use. This rule applies to any facility that manufactures, sells, distributes, or otherwise uses any of the listed chemicals. This source does not use any of the listed chemicals.
- 7. Prevention of Accidental Releases 112(r):** The source does not manufacture, process, use, store, or otherwise handle one or more of the regulated substances listed in 40 CFR 68 Subpart F and Regulation 5.15, Chemical Accident Prevention Provisions, in a quantity in excess of the corresponding specified threshold amount.
- 8. Insignificant Activities:** The following activities, as referenced in the source's Title V Permit Application, have been determined by the District to be insignificant.

INSIGNIFICANT ACTIVITIES		
Description	Quantity	Basis
Miscellaneous wood working operations	1	Regulation 2.02, section # 2.3.5
Brazing, soldering or other welding equipment	Various	Regulation 2.02, section # 2.3.4

1. Insignificant Activities are only those activities or processes falling into the general categories defined in District Regulation 2.02, Section 2, and not associated with a specific operation or process for which there is a specific regulation. Equipment associated with a specific operation or process (Emission Unit) shall be listed with the specific process even though there may be no applicable requirements. Information contained in the permit and permit summary shall clearly indicate that those items identified with negligible emissions have no applicable requirements.
2. Activities identified In District Regulation 2.02, Section 2, may not require a permit and may be insignificant with regard to application disclosure requirements but may still have generally applicable requirements that continue to apply to the source and must be included in the Title V permit.
  - a. No facility, having been designated as an insignificant activity, shall be exempt from any generally applicable requirement which shall include a 20% opacity limit for facilities not otherwise regulated.
  - b. No periodic monitoring shall be required for facilities designated as insignificant activities.